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Restaurant Concentration in Louisiana

by

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Abstract

Growth of the franchise restaurant industry and merger activity among restaurants raise questions concerning concentration in the Louisiana restaurant industry. Firm employment data from the Louisiana Department of Labor for selected urban and rural parishes for 1975-86 and the concentration ratio, herfindahl index and the entropy measure were used for these concentration estimates. Concentration was, in general, low in urban parishes and higher in rural parishes. Concentration decreased from 1975 to 1986 in five of the seven urban parishes and increased or was unchanged in five of the eight rural parishes. *Ceteris paribus*, this would imply higher profits in rural as opposed to urban parishes. The correlation between the concentration ratio and a customer density measure was positive indicating competition for business was lower in the more concentrated markets.

Introduction

Not so many years ago, visiting a restaurant was, for many people, an event treasured by all members of the family, particularly the weary homemaker. Restaurant meals were reserved for special occasions or when traveling away from home. Restaurants were mostly of the sit-down type and menu selections were somewhat limited as all food preparation was done on the premises.

During the intervening years, a number of changes have occurred that changed the organizational structure of the restaurant industry and the demand for its services. Perhaps the most important change in the organization of restaurants came with the development of franchised "fast food" restaurants. The demand for restaurant services also increased as more wives entered the labor force, family incomes increased, and family size decreased.

As a result of changes both within and exogenous to the restaurant industry, the industry has grown rapidly in both urban and rural areas. The franchised "fast food" segment of the industry has become one of the most readily recognized institutions in the United States. While there were 253,136 separate eating places in the United States in 1972, handling food with a retail food value of $30.39 billion, the number of eating places had increased to 332,611 by 1987 serving food valued at $139.28 billion (Census of Retail Trade).

Statement of the Problem

The growth of the franchise organizational form and extensive merger activity among its members raises questions concerning the status of the industry's changing structure. Market structure is most commonly measured by using the Concentration Ratio to gauge seller concentration. The Concentration Ratio measures the proportion of sales, assets, employment, profit, or value added held by the n largest firms in the market, where n is usually 2, 4, 8, or 12 firms. Industrial Organization theory indicates that the market power of firms increases when concentration in a market area increases; this usually leads to higher menu prices and/or increased firm profits.

Objectives

The objectives of this study were threefold:

1. To describe the structure of the Louisiana restaurant sector over the 1975-86 period;

2. To estimate restaurant concentration in selected Louisiana parishes in 1975, 1980, 1984 and 1986; and,

3. To estimate the relationship in Louisiana between restaurant concentration and customer density in urban and rural areas in 1986.

This paper evaluates change in concentration in the Louisiana restaurant industry over the 1975-86 period for selected urban and rural parishes, where the parish is assumed to be the appropriate market area. The measures normally used to measure concentration (Concentration Ratio, Herfindahl Index and Entropy Measure) do not account for differences in the demand for restaurant offerings within a market area; instead, firm numbers are expected to adjust to compensate for differences in demand. Population density in the market area is compared to concentration measures in this study.

Methodology

Data for selected years over the 1975-86 period were obtained from the Louisiana Department of Labor, Office of Employment Security. Firm employment data for restaurants in seven urban parishes (Caddo, Calcasieu, East Baton Rouge, Lafayette, Orleans, Ouachita and Rapides) and eight rural parishes (Allen, Avoyelles, Cameron, Lafourche, Natchitoches, St. Mary, Terrebonne and West Carroll) were obtained. These parishes represent the state's major urban areas and two parishes in each of four rural areas of the state (north, central, southwest and southeast). Firm employment data were used as a proxy for the unavailable firm sales data. Given that large firms tend to use labor more efficiently, through specialization and more extensive use of technology, concentration measures based on employment tend to underestimate concentration measures based on sales. Parish population estimates were secured from the Rand "Commercial Atlas & Marketing Guide."

Three measures of concentration were used in the analysis: Concentration Ratio, Herfindahl Index and Entropy Measure. The Concentration Ratio is defined as the percentage of total employment accounted for by the n largest firms ranked in order of market share. The Concentration Ratio (CR) was calculated using:

$$CR_n = \sum_{i=1}^{n} X_i$$

where n = number of firms being assessed (2, 4, 8, 12, 20) and X_i = market share of the ith firm. The CR ranges from a value of near zero (all firms have equal and small market shares) to one (n firms have 100% of market share in industry).

The Herfindahl Index was calculated using the following:

$$H = \sum_{i=1}^{n} S_i^2$$

The Herfindahl Index differs from the CR in two ways:

1. Uses individual market share data on all firms in the industry.

2. The market shares are squared which gives more weight to the larger firms.

The Herfindahl Index ranges from 1/n to 1 with unity showing the highest concentration.

The Entropy Measure was determined using:

$$E = \sum_{i=1}^{n} S_i \log_2(1/S_i)$$

The Entropy Measure ranges from zero (pure monopoly) to log n (all firms have equal market shares). Entropy rises with equality in market shares and falls with inequality in market shares. Research has shown that these three measures of

concentration yield results that are highly correlated (Scherer, p. 58).

The authors were unable to locate any recent restaurant concentration studies on the local market level. Van Dress described the U.S. eating out industry in 1979, indicating that 70 percent of these firms consisted of single-unit firms and only 2.5 percent consisted of firms with more than 50 units. Approximately 14 percent were franchisee owned and 12 percent franchisor owned. The single-unit firms had 47 percent of sales and firms with 50 or more units had 16.5 percent of sales.

A number of criteria for interpreting the value of concentration measures has been suggested (for example, Bain, Shepherd and Scherer). Most of these researchers used the Concentration Ratio as a basis for their criteria. Shepherd suggested two criteria used in this study. He classified a market (industry) with a CR4 value of 0.6 or higher as being a tight oligopoly whereas a CR4 of 0.4 or lower would represent workable competition. Scherer reported that a CR1 of 0.4 or more would suggest single firm leadership.

Results and Conclusions

Numbers of restaurants increased in five of the seven urban parishes over the 1975-86 period (Table 1). Ouachita parish experienced a 54 percent increase while Calcasieu lost 14 percent, the latter area suffering greatly from the economic recession during the period. Only two rural parishes had increased numbers of restaurants over the period; numbers were essentially unchanged in three rural parishes; and three had fewer restaurants in 1986 than in 1975. *Ceteris paribus*, this would imply better economic conditions in the urban parishes and/or shifting population from rural to urban parishes over the period.

The increase in number of restaurants in urban parishes would be expected to have a negative impact on concentration. Actually, concentration, as measured by the CR, decreased in five of the seven urban parishes (Table 2). Orleans parish experienced the greatest drop in concentration while Calcasieu had the greatest increase (along with the greatest drop in number of restaurants). None of the urban parishes had CR4s greater than 0.4, however.

Concentration increased in three of the eight rural parishes based on the CR (Table 2). Two of these parishes experienced a decrease in the number of restaurants. The largest increase and decrease in concentration came in Allen and St. Mary parishes, respectively. Three rural parishes had CR4s greater than 0.6 and three had CR4s less than 0.4.

As expected, the Herfindahl and Entropy values compared quite closely with the CR for the urban and rural parishes (Table 3). Direction of change in concentration differed between the CR and the other measures in two urban and two rural parishes; however, in each case, the change in concentration as estimated by the three measures was small.

Concentration is a measure of the structure of an industry, hence, a measure of competitive conditions in the industry. It indicates whether an industry (or other grouping of firms) could be characterized by small or large variability in size of firms within the industry. Low (high) market power is attributed to low (high) concentrated market groupings. If concentration is low (high), firms are expected to have little (more) control over prices, output and entry conditions in the group.

Actual competitive conditions, however, depend on the number and size of firms and the extent of the market facing the firms. The concentration measure does not consider the latter. *Ceteris paribus*, the smaller (larger) the market, the more (less) competitive firms must be to make sales. The restaurant sector should be highly competitive if patron density is low and highly selective when patron density is large.

Population estimates for the fifteen Louisiana parishes are given in Table 4. A measure of the extent of the market for restaurant services was created by determining the mean number of potential patrons per restaurant for each parish. The latter ranged from 511 to 1,260 in the urban parishes and from 908 to 1,871 in the rural parishes in 1986. If the size distribution of restaurants were equal within urban parishes and within rural parishes and individuals within urban and within rural parishes were equally likely to patronize restaurants, these values would represent the difficulty restaurants in given parishes have in securing business (i.e. patrons).

The correlation coefficient between population/restaurants and the CR4 was determined for both urban and rural parishes. The correlation coefficient between population/restaurants and CR4 was 0.4656 and 0.2012 for urban and rural parishes, respectively. As both coefficients are positive, concentration increases as population density increases. Therefore, the restaurant

Table 1. Numbers of Restaurants, Selected Parishes and Years, Louisiana, 1975-89.

Parish	1975	1980	1984	1986
Urban				
Caddo (Shreveport)	207	224	230	230
Calcasieu (Lake Charles)	160	170	171	138
E. Baton Rouge (Baton Rouge)	285	342	338	401
Lafayette (Lafayette)	152	169	163	192
Orleans (New Orleans)	740	689	692	688
Ouachita (Monroe)	111	132	132	156
Rapides (Alexandria)	109	114	101	116
Rural				
Allen (West Central)	19	9	9	14
Avoyelles (East Central)	27	26	25	31
Cameron (Southwest)	9	14	12	7
Lafourche (South Central)	68	80	77	67
Natchitoches (Northwest)	31	26	29	31
St. Mary (Southeast)	69	73	79	57
Terrebonne (Southwest)	90	97	101	110
W. Carroll (Northeast)	7	6	8	7

Table 2. Concentration Ratios for Restaurants, Selected Parishes, and Years, Louisiana, 1975-86.

	1975		1980		1984		1986	
Parish	CR4	CR8	CR4	CR8	CR4	CR8	CR4	CR8
Urban								
Caddo	.215	.337	.167	.264	.226	.315	.138	.250
Calcasieu	.228	.342	.216	.348	.210	.329	.234	.365
E. Baton Rouge	.230	.308	.219	.284	.224	.294	.205	.287
Lafayette	.275	.388	.259	.366	.254	.347	.218	.346
Orleans	.178	.254	.159	.249	.183	.272	.119	.179
Ouachita	.194	.328	.221	.327	.216	.324	.223	.324
Rapides	.254	.368	.213	.367	.228	.375	.254	.375
Rural								
Allen	.428	.703	.742	.968	.762	.976	.610	.817
Avoyelles	.431	.733	.589	.802	.577	.768	.516	.725
Cameron	.684	.974	.684	.908	.684	.930	.900	1.000
Lafourche	.359	.504	.214	.344	.265	.443	.299	.491
Natchitoches	.427	.614	.531	.308	.483	.692	.422	.630
St. Mary	.549	.664	.583	.703	.583	.693	.262	.429
Terrebonne	.614	.688	.501	.677	.488	.678	.392	.503
W. Carroll	.893	*	.946	*	.804	1.000	.848	*

* Could not calculate.

Table 3. Herfindahl and Entropy Values for Restaurants, Selected Parishes and Years, Louisiana, 1975-86.

Herfindahl Parish	1975	1980	1984	1986	Entropy 1975	1980	1984	1986
Urban								
Caddo	.21	.02	.01	.02	6.1	6.6	6.7	6.7
Calcasieu	.02	.02	.02	.03	6.2	6.2	6.2	5.9
E. Baton Rouge	.06	.02	.02	.02	6.2	6.9	6.9	7.1
Lafayette	.04	.03	.03	.02	5.8	6.1	6.1	6.3
Orleans	.02	.02	.01	.02	7.6	7.5	7.4	7.9
Ouachita	.02	.02	.01	.03	6.3	6.1	5.6	6.1
Rapides	.03	.03	.03	.03	5.8	5.8	5.7	5.8
Rural								
Allen	.08	.16	.18	.12	3.9	2.8	2.7	3.4
Avoyelles	.08	.14	.13	.09	4.1	3.6	3.7	3.9
Cameron	.14	.16	.16	.38	2.9	3.1	3.0	2.0
Lafourche	.05	.03	.03	.04	5.1	5.6	5.4	5.1
Natchitoches	.07	.09	.08	.06	4.3	3.9	4.1	4.2
St. Mary	.19	.23	.24	.09	4.1	3.8	3.8	4.6
Terrebonne	.13	.08	.08	.06	2.2	4.6	4.6	5.2
W. Carroll	.26	.35	.20	.20	2.3	1.9	2.6	2.5

Table 4. Population, Number of Restaurants, Population Density and Concentration Ratio, Selected Parishes, Louisiana, 1986.

Parish	Population	Restaurants	Pop/Res	CR4
Urban				
Caddo	127,900	230	556	.138
Calcasieu	173,900	138	1,260	.234
E. Baton Rouge	398,600	401	994	.205
Lafayette	172,200	192	897	.218
Orleans	557,700	688	811	.119
Ouachita	144,800	156	928	.233
Rapides	139,200	116	1,200	.254
Rural				
Allen	22,500	14	1,607	.610
Avoyelles	43,200	31	1,394	.516
Cameron	8,700	7	1,243	.900
Lafourche	98,000	67	1,463	.299
Natchitoches	41,100	31	1,326	.422
St. Mary	64,900	57	1,128	.262
Terrebonne	99,900	110	908	.392
W. Carroll	13,100	7	1,871	.848

Sources: Population - Rand McNally
Restaurants - Table 1
CR4 - Table 2

industry (in the selected Louisiana parishes) had, in 1986, a higher inequality in firm size in those parishes where potential patron density was higher.

Implications

Concentration studies at the local level provide useful information for existing firms as well as prospective entrants. Profits, in general, tend to be smaller (higher) in low (high) concentration markets as firms lack (have) the power to raise margins above the competitive level. Concentration was low in the urban parishes indicating little inequality in employment among urban restaurants. The rural parishes had higher concentration and higher customer density. Averages, however, fail to reveal that the services provided by individual firms can earn them either very large or very small margins depending on customer reactions.

Several limitations associated with this study include: some small firms do not report to the Louisiana Department of Labor, employment data tend to underestimate actual concentration measures, labor data do not always distinguish between firm and units for multi-unit firms and population estimates do not account for consumption by travelers or tourists in urban areas.

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